

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A light-responsive vehicle control for a vehicle including a passenger compartment having at least a forward viewing forward window and a rearward viewing rear window, comprising:

at least one light sensor directed toward at least one vehicle window to receive light
5 passing through said at least one vehicle window wherein said at least one vehicle window has a light transmissivity value; and

a control receiving an input from said at least one light sensor and producing an output to operate a device, said output being a function at least of light sensed by said light sensor and at least one operating parameter;

10 wherein said at least one operating parameter is a function of light transmissivity of said at least one vehicle window.

2. The light-responsive vehicle control in claim 1 wherein said output is a drive signal establishing a partial reflectance level of an electro-optic mirror.

3. The light-responsive vehicle control in claim 2 wherein said electro-optic mirror is an electrochromic mirror.

4. The light-responsive vehicle control in claim 2 wherein said at least one light sensor is facing generally rearwardly of the vehicle and said at least one vehicle window is a rear window.

5. The light-responsive vehicle control in claim 4 including another light sensor sensing light in a different direction than at least one said light sensor wherein said output is a function of light sensed by both of said light sensors.

6. The light-responsive vehicle control in claim 5 wherein said another light sensor is directed generally forwardly of the vehicle toward the vehicle forward window.

7. The light-responsive vehicle control in claim 1 wherein said output is a headlight control signal establishing a state of operation of the vehicle's headlights.
8. The light-responsive vehicle control in claim 7 including another light sensor sensing light in a different direction than said light sensor wherein said output is a function of light sensed by both of said light sensors.
9. The light-responsive vehicle control in claim 8 wherein said at least one light sensor is facing generally rearwardly of the vehicle and said vehicle window is a rear window.
10. The light-responsive vehicle control in claim 8 wherein said another light sensor is directed generally forwardly of the vehicle toward the vehicle forward window.
11. The light-responsive vehicle control in claim 1 wherein said at least one operating parameter is sensitivity.
12. The light-responsive vehicle control in claim 1 wherein said control establishes a value of said at least one operating parameter in response to long duration sampling of said at least one light sensor.
13. The light-responsive vehicle control in claim 12 wherein said long duration sampling is on the order of at least one hour of vehicle operation.
14. The light-responsive vehicle control in claim 12 wherein said long duration sampling is on the order of at least ten hours of vehicle operation.
15. The light-responsive vehicle control in claim 12 wherein said long duration sampling occurs when light sensed by said at least one light sensor is greater than a particular light level indicative of daylight operating conditions.
16. The light-responsive vehicle control in claim 15 wherein said particular light level is on the order of 1,000 lux.

17. The light-responsive vehicle control in claim 12 wherein said long duration sampling occurs when the vehicle is initially operated.
18. The light-responsive vehicle control in claim 1 wherein said control comprises digital logic including memory and said at least one operating parameter value is stored in said memory.
19. The light-responsive vehicle control in claim 1 including a manually adjustable input device for entering said at least one operating parameter in said control.
20. The light-responsive vehicle control in claim 19 wherein said input device is operable by a technician to enter said at least one operating parameter, but not operable by a driver of the vehicle.
21. The light-responsive vehicle control in claim 2 wherein said at least one operating parameter is at least one of a minimum reflectance level below which electro-optic mirror will not color and a maximum reflectance level above which said electro-optic mirror will not color.
22. The light-responsive vehicle control in claim 1 wherein said device includes an interior mirror and at least one exterior mirror and wherein said operating parameter is a ratio of partial reflectance levels between said interior mirror and said at least one exterior mirror.
23. The light-responsive vehicle control mirror system in claim 22 wherein said operating parameter further includes at least one of a minimum value of partial reflectance level below which said interior mirror will not color and a maximum value of partial reflectance level above which said at least one exterior mirror will not color.
24. An adaptive vehicle automatic rearview mirror system for establishing a partial reflectance level of an electro optic rearview mirror element, said vehicle having a windshield for viewing forwardly of the vehicle and a rear window for viewing rearwardly of the vehicle, said system, comprising:
- 5 an electro-optic mirror;

a pair of light sensors within the passenger compartment, at least one of said light sensors facing generally rearwardly of the vehicle to receive light passing through the rear window of the vehicle;

10 a control receiving input from said light sensors and producing a drive signal establishing a partial reflectance level of the electro-optic mirror, said drive signal being a function at least of light sensed by said light sensors and at least one operating parameter;

wherein said control establishes a value of said at least one operating parameter as a function of long duration sampling of light sensed by said at least one of said light sensors.

25. The mirror system in claim 24 wherein said electro-optic mirror is an electrochromic mirror.

26. The mirror system in claim 24 wherein said electro-optic mirror is an exterior mirror positioned outside the vehicle passenger compartment.

27. The mirror system in claim 24 wherein said rear window is optionally a tinted window or a non-tinted window.

28. The mirror system in claim 24 wherein said long duration sampling is carried out on the order of at least one hour of vehicle operation.

29. The mirror system in claim 28 wherein said long duration sampling is carried out on the order of at least tens of hours of vehicle operation.

30. The mirror system in claim 24 wherein said long duration sampling is carried out when light sensed by one of said light sensor is greater than a particular light level indicative of daylight operating conditions.

31. The mirror system in claim 30 wherein said particular light level is on the order of 1,000 lux.

32. The mirror system in claim 24 wherein said long duration sampling occurs when the vehicle is initially operated.

33. The mirror system in claim 24 wherein said control comprises digital logic and said at least one operating parameter value is stored in memory.

34. The mirror system in claim 24 wherein said at least one operating parameter is sensitivity.

35. The mirror system in claim 19 wherein said electro-optic mirror includes an interior mirror and at least one exterior mirror.

36. The mirror system in claim 35 wherein said operating parameter includes at least one of a minimum value of partial reflectance level below which said interior mirror will not color and a maximum value of partial reflectance level above which said at least one exterior mirror will not color.

37. The method of claim 35 wherein said operating parameter is a ratio of partial reflectance levels between said interior mirror and said at least one exterior mirror.

38. The method of claim 37 wherein said at least one operating characteristic is a minimum reflectivity below which said interior mirror will not color.

39. A method of adapting a light-responsive vehicle control to a vehicle having a windshield providing a field of view forward of the vehicle and a rear window providing a field of view rearward of the vehicle, wherein the rear window has an unknown level of transmissivity, comprising:

5 providing at least one first light sensor receiving light passing through the vehicle rear window;

monitoring at least said one said first light sensor for an extended period of time; and

establishing at least one operating characteristic of the light-responsive vehicle control as a function of said monitoring.

40. The method of claim 39 wherein said at least one operating characteristic is sensitivity.

41. The method of claim 39 wherein said monitoring includes monitoring at least said one said first light sensor for on the order of an hour of vehicle operation.
42. The method of claim 39 wherein said monitoring includes monitoring at least said one said first light sensor for on the order of tens of hours of vehicle operation.
43. The method of claim 39 wherein said monitoring includes monitoring at least said one said first light sensor when sensed light level is above a particular level.
44. The method of claim 43 wherein said particular level is indicative of daylight condition.
45. The method of claim 44 wherein said particular level is approximately 1,000 lux.
46. The method of claim 39 including at least one second light sensor receiving light not substantially passing through the vehicle window.
47. The method of claim 46 wherein said at least one second light sensor receives light passing through the vehicle windshield.
48. The method of claim 39 wherein said light-responsive vehicle control is an electro-optic rearview mirror system.
49. The method of claim 48 wherein said rearview mirror system includes at least one exterior mirror which is viewed through a non-tinted window.
50. The method of claim 49 wherein said at least one operating characteristic is a sensitivity value for establishing a partial reflectivity level of said at least one exterior mirror.
51. The method of claim 48 wherein said electro-optic rearview mirror system includes at least one electrochromic rearview mirror.
52. A vehicular rearview mirror system for a vehicle having a passenger compartment, at least one side window lateral of the driver and a rear window, comprising:

an interior rearview electro-optic mirror inside the vehicle passenger compartment and at least one exterior electro-optic mirror outside the vehicle passenger compartment and visible to the driver through a side window lateral of the driver;

a forward light sensor capturing ambient light forward of the vehicle and a rearward light sensor capturing glare light rearward of the vehicle through a rear window; and

a control that produces outputs supplied individually to said interior rearview mirror and said at least one exterior mirror to establish the partial reflectance levels of the mirrors and selectively driving said at least one exterior mirror to a lower reflectance level than said interior mirror as a function of the tint condition of the vehicle rear window.

53. The vehicular rearview mirror system in claim 52 wherein said control responds to relative light levels sensed by said forward and rearward sensors to determine a tint condition of the vehicle rear window.

54. The vehicular rearview mirror system in claim 52 wherein said control drives said at least one exterior mirror to a reflectance level that is related to the reflectance level of said interior mirror as a function level of the ratio of light transmissivity of the vehicle's rear window to that of the side window lateral of the driver.

55. The vehicular rearview mirror system in claim 52 wherein said control selectively establishes at least one of a minimum value of partial reflectance below which said interior mirror will not color and a maximum value of partial reflectance above which said at least one exterior mirror will not color.

56. The vehicular rearview mirror system in claim 52 wherein said electro-optic mirrors are electrochromic mirrors.

57. The light-responsive control in claim 52 including a manually adjustable input device for entering a parameter related to tint condition of the vehicle rear window in said control.

58. The light-responsive control in claim 57 wherein said input device is operable by a technician to enter said parameter, but not operable by the driver of the vehicle.

59. The vehicle rearview mirror system in claim 52 wherein said control establishes a ratio of the reflectance level of said exterior mirror to said interior mirror.

60. The vehicular rearview mirror system in claim 59 wherein said control establishes at least one of a minimum value of reflectance below which said interior mirror will not color and a maximum value of reflectance above which said exterior mirror will not color.